

158
PROCEEDINGS

OF THE

PHYSICAL SOCIETY OF LONDON

From December 1923 to August 1924

VOL. XXXVI

LONDON :

FLEETWAY PRESS LTD.,

3-9, DANE STREET, HIGH HOLBORN, W.C.1.

MDCCCXXIV.

LONDON:
THE FLEETWAY PRESS LTD.,
DANE STREET, HOLBORN, W.C.1.

CONTENTS.

VOL. XXXVI.

	PAGE
Portrait of Alexander Russell, M.A., D.Sc., President 1922-24	<i>Frontispiece</i>
Proceedings at Meetings	<i>vii</i>
Report of Lecture: The Excitation and Ionization Potentials of Gases and Vapours. By FRANK HORTON, Sc.D., F.R.S.....	1
X-Ray Analysis of Solid Solutions. By E. A. OWEN, M.A., D.Sc., and G. D. PRESTON, B.A., The National Physical Laboratory.....	14
Discussion on The Structure of Sodium Salts. By S. H. PIPER, D.S.O., B.Sc., F.Inst.P., and E. N. GRINDLEY, B.Sc.....	31
Scattering of Light by Carbon Dioxide, Nitrous Oxide and Some Organic Vapours. By A. L. NARAYAN, M.A., A.Inst.P.....	32
On the Measurement of the Surface Tension of a Small Quantity of Liquid. By ALLAN FERGUSON, M.A., D.Sc.	37
A Demonstration of Experiments on the Reproduction of Vowel Sounds. By Sir RICHARD PAGET, Bt.	45
X-Ray Analysis of Zinc-Copper Alloys. By E. A. OWEN, M.A., D.Sc., and G. D. PRESTON, B.A.	49
The Aerodynamic Resistance of Spheres, Shot Upward to Measure the Wind. By LEWIS F. RICHARDSON, F.Inst.P., F.R.Met.Soc.....	67
Investigations of Piezo-Electric Effects with Dielectrics. By K. R. BRAIN, B.Sc., Lecturer in Physics, St. John's College, Battersea.....	81
Lecture: Recent Work in Stellar Physics. By E. A. MILNE, M.A., Fellow of Trinity College, Cambridge, and Assistant Director of the Solar Physics Observatory, Cambridge	94
Discussion on Loud-Speakers for Wireless and Other Purposes.....	114
Æolian Tones. By E. G. RICHARDSON, M.Sc.	153
The Effects of Torsion on the Thermal and Electrical Conductivities of Metals. By J. E. CALTHROP, B.A., B.Sc.....	168
A Generalisation of Professor Whitehead's Theory of Relativity. By G. TEMPLE, B.Sc.....	176

	PAGE
On the Structure of the Atomic Nucleus and the Mechanism of its Disintegration. By Dr. HANS PETTERSSON	194
The Effect of a Magnetic Field on the Surface Tension of a Liquid of High Susceptibility. By WINIFRED L. ROLTON, B.Sc., and R. STANLEY TROOP, B.Sc.	205
A Demonstration of an Auxiliary Optical System for the Examination of Crystal Sections by Conoscopic Methods. By C. W. HAWKSLEY.....	210
Discussion on Loud-Speakers for Wireless and Other Purposes (<i>Concluded</i>).....	211
A New Photo-Electric and Ionisation Effect. By U. A. OSCHWALD, B.A., and A. G. TARRANT, B.Sc., A.R.C.S., F.Inst.P.....	241
On Certain Properties of the "Osglim" Neon-filled Lamp. By J. H. SHAXBY and J. C. EVANS	253
Notes on Some Electrical Properties of the Neon Lamp. By U. A. OSCHWALD, B.A., and A. G. TARRANT, B.Sc., A.R.C.S., F.Inst.P.....	262
A Critical Resistance for Flashing of the Low Voltage Neon Discharge Tube. By J. TAYLOR, B.Sc., and W. CLARKSON, B.Sc.....	269
On the Thermo-Electric Properties of Bismuth Alloys, with Special Reference to the Effect of Fusion. With a Note on Thermo-Electric Reinversion. By CHARLES ROBERT DARLING, F.Inst.P., F.I.C., and REGINALD HENRY RINALDI	281
A Preliminary Measurement of a Primary Gas-Grown Skin. By J. J. MANLEY, M.A.....	288
On the Removal of Gas-Grown Skins from a Sprengel Pump. By J. J. MANLEY, M.A.....	291
The "Diametral Pane" in Elementary Optics. By CHARLES H. LEES, D.Sc., F.R.S.	294
Apparatus for the Determination of the Heat of Evaporation of Liquids of High Boiling Points. By J. H. AWBERY, B.A., B.Sc., and EZER GRIFFITHS, D.Sc.	303
On the Study of Diffusion in Liquids by an Optical Method. By BASIL W. CLACK, M.Sc., Ph.D., F.Inst.P.	313
Cohesion (VI.). By HERBERT CHATLEY, D.Sc., A.Inst.P.....	336
A Demonstration of Sub-Harmonics Produced by a Tuning-Fork. By W. N. BOND, M.Sc.	340
The Atomic Structure of Two Intermetallic Compounds. By E. A. OWEN, D.Sc., and G. D. PRESTON, B.A., National Physical Laboratory.....	341

Contents.

V.

	PAGE
On a Method for the Synchronous and Instantaneous Illumination of Objects Rotating or Vibrating at Very High Speeds. By G. E. BAIRSTO, D.Sc., D.Eng., F.Inst.P., Royal Aircraft Establishment.	349
The Absorption and Scattering of γ -Rays. By E. A. OWEN, M.A., D.Sc., N. FLEMING, B.A., and Miss W. E. FAGE, B.Sc., The National Physical Laboratory	355
The Flow of Compressible Fluids, Treated Dimensionally. By W. N. BOND, B.A. (Cantab.), M.Sc. (Lond.), F.Inst.P., University College, Reading.....	367
Note on Israj, a Remarkable Indian Stringed Instrument. By D. B. DEODHAR, M.Sc., University of Lucknow, India	379
Thermionic Emission from Systems with Multiple Thresholds. By Prof. O. W. RICHARDSON, D.Sc., F.R.S.	383
A Method for Measuring very Small Capacities. By L. HARTSHORN, A.R.C.S., B.Sc., D.I.C., National Physical Laboratory	399
The Variation of Young's Modulus at High Temperatures. By CHAS. H. LEES, D.Sc., F.R.S., JAS. P. ANDREWS, B.Sc., and L. S. SHAVE, B.Sc.	405
Recent Experiments on the Artificial Disintegration of the Elements. By Prof. Sir ERNEST RUTHERFORD, F.R.S., and Dr. J. CHADWICK	417
The Ninth Guthrie Lecture: The Photo-Electric Effect in the case of High Frequency Radiation, and Some Associated Phenomena. By M. LE DUC DE BROGLIE	423
A Demonstration of a Method of Optical Projection of Opaque Objects. By W. A. BENTON	429
A Demonstration of An Anomaly in Frictional Electricity. By Prof. A. O. RANKINE, O.B.E., D.Sc., Imperial College of Science and Technology	430
A Demonstration of The Fluorescence of Transparent Fused Silica. By Dr. W. E. CURTIS, King's College	431
A Demonstration of A Selenium Photometer. By Dr. F. C. TOY	432
A Demonstration of A New String Galvanometer. By Prof. ERNEST WILSON, King's College	433
A Demonstration of A Two-Dimensional Recording Accelerometer for Aeroplane Research. By Dr. G. F. C. SEARLE, F.R.S.	435
Index	437

